

is disposed upstream at an angle to the longitudinal direction relative to the movable plate, so that the plate provides the force against the particulate material to inhibit the particulate material from free flowing at a speed greater than the conveying speed of the conveying belt.

REMARKS

The Office Action mailed November 7, 2002 has been received and its contents carefully considered. Reconsideration and withdrawal of the outstanding objections and rejections are respectfully requested in view of the foregoing amendments in the following remarks.

A request for approval of drawing amendments accompanies this paper, in which the reference number 44 has been added to indicate the cylinder in FIG. 1 in place of reference number 12. This is believed to address the objections to the drawings and paragraph 24 of the disclosure. The abstract of the disclosure has been rewritten in accordance with the Examiner's remarks. Accordingly, withdrawal of the objections to the drawings and specification is respectfully requested.

Claims 1-4, 6-8, and 11-20 were rejected as being anticipated by U.S. Patent No. 3,917,236 (Hanson). Claims 1, 9 and 10 were rejected as being anticipated by U.S. Patent No. 4, 257,518 (Stock). Claim 5 was rejected as being unpatentable over Hanson. These rejections are respectfully traversed for the following reasons.

Without conceding a propriety of the prior art rejections, each of the independent claims 1, 11 and 16, have been amended herein to recite that a plate is pivotally mounted by a hinge and is moveable to at least one position wherein the plate is at an angle to the forward longitudinal direction, with the angle being greater than 0 and less than 90 degrees, and at which position the hinge is disposed upstream at an angle to the longitudinal direction relative to the moveable

plate. As described in the specification for example in paragraphs 28 to 31, movement of the plate in the direction as shown by arrow A in FIG. 1 to an angled position, provides an opposing force against the movement of coal to the right and at least partially alleviates the problem of the free flow of coal over the belt at a speed greater than the belt speed. A benefit of the present invention is the ability to alleviate at least to some degree a problem of “free flowing” of material over a feeder belt. Such free flowing occurs when due to the weight of the material in the downcomer, the material slides across a feeder belt at a speed greater than the speed of translation of the feeder belt. Accordingly, it will be appreciated that the recited plate is not merely a metering plate which is capable of changing cut-off height, but rather provides free flow resisting force due to the angle of the plate. In order to accomplish this, in the invention recited in the amended independent claims, the movable plate has its hinge upstream. Such a structure and operation is not taught or suggested by Hanson or Stock.

Turning to Hanson, this patent discloses a movable gate 46. However, FIG. 4 and column 5, line 6-10 disclose that the gate 46 is raised or lowered. The figure illustrates essentially a vertical translation of the plate. The gate is also described at column 51, 1-5 as being moved between “open” and “closed” positions. Nothing in the Hanson patent is seen to disclose or suggest that the metering gate 46 provides any resistance to the free flowing of the material by being at an angle. Moreover, FIG. 4 does not show a gate with a hinge upstream as claimed.

Turning to the Stock patent, this patent illustrates a leveling bar 65 carried on an hinge 66. This patent is not seen to teach or suggest that this bar can perform the function of providing a force that resists the free flowing of the material at a speed greater than the belt. Moreover,


this patent also does not show a hinge upstream at an angle to the fluid flow direction as recited in the amended claims.

In view of the foregoing, and reconsideration and allowance of the application is believed in order, and such action is earnestly solicited.

No additional fees are believed necessary. However, please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 50-2036 and please credit any excess fees to such deposit account.

Respectfully submitted,

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APPENDIX

VERSION WITH MARKINGS SHOWING CHANGES MADE

IN THE SPECIFICATION AND CLAIMS

IN THE SPECIFICATION:

In the Specification, Paragraph 24:

Turning to FIG. 1, the feeder 10 includes a feeder housing 12 located below a feeder inlet pipe 14, commonly referred to as a downcomer with downcomer centerline [45] 15 . Coal falls through a hopper in a vertical column through the downcomer 14, and exists the downcomer 14 at the lower opening 16 of the downcomer pipe. This lower opening 16 is also be refered to as a feeder inlet, since it is the location at which coal enters the feeder. It will be appreciated that the coal drops onto a belt 18 which is supported on pulleys 20 and 22. Pulley 20 is driven by a belt drive motor 24 which provides motive power through a drive reducer 26, as seen in FIGS. 2 and 3.

IN THE ABSTRACT:

Please replace the abstract with the following:

[A device for feeding particulate material includes a conveyor belt, a material inlet located above at least a first portion of the conveyor belt, and a movable plate located above at least a second portion of the conveyor belt, that provides a force on the particulate material.]

A material feeder is provided which has a movable plate disposed above the conveyor belt. The movable plate can be positioned vertically to entirely block the flow of material, or can be moved at an angle from vertical relative to the conveyor direction. In the angled position, the blade provides a resistant force against the material so that the material does not freely flow

across the belt at a rate greater than the belt speed. A power cylinder is provided to remove actuate blade. The feeder is particularly suitable for feeding coal from a downcomer to a further coal processing apparatus such as a pulverizer.

IN THE CLAIMS:

Please amend claims 1, 11, and 16 as follows:

1. (Amended) A device for feeding particulate material, comprising:
a conveyor belt that conveys the material in a forward longitudinal direction;
a material inlet located above at least a first portion of the conveyor belt; and
a movable plate located above at least a second portion of the conveyor belt, so the plate pivotally mounted by a hinge and movable to at least one position where the plate is at an angle to the forward longitudinal direction and the angle is greater than 0 and less than 90 degrees, and at which position the hinge is disposed upstream at an angle to the longitudinal direction relative to the movable plate, that the plate provides a force [on] against the particulate material, to inhibit the particulate material from free flowing at a speed greater than the conveying speed of the conveying belt.

11. (Amended) a device for feeding particulate material, comprising:
means for conveying the material in a first longitudinal direction; [and]
a movable plate located above at least a second portion of the conveying means, the plate pivotally mounted by a hinge and movable to at least one position where the plate is at an angle to the forward longitudinal direction and the angle is greater than 0 and less than 90 degrees, and at which position the hinge is disposed upstream at an angle to the longitudinal direction relative to the movable plate, so that the plate provides a force against the particulate

material to inhibit the particulate material from free flowing at a speed greater than the conveying speed of the conveying belt; and

means for urging [a] the movable plate against the material to apply [a] the force against the material [in a direction other than the first longitudinal direction,].

16. (Amended) A method for feeding particulate material, comprising:

conveying the material in a first longitudinal direction; and

urging a movable plate against the material to apply a force against the material in a direction other than the first longitudinal direction, the plate pivotally mounted by a hinge and movable to at least one position where the plate is at an angle to the forward longitudinal direction and the angle is greater than 0 and less than 90 degrees, and at which position the hinge is disposed upstream at an angle to the longitudinal direction relative to the movable plate, so that the plate provides the force against the particulate material to inhibit the particulate material from free flowing at a speed greater than the conveying speed of the conveying belt.